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Clean Version of Pending Claims

METHOD FOR ATTACHING A SEMICONDUCTOR DIE TO A SUBSTRATE
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Claims 34-63 as of October 17, 2001 (response to first office action).

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34.) A method of attaching a semiconductor die to an organic support structure, comprising:

selecting a two-sided adhesive tape having at least one adhesive, wherein the adhesive tape has a low lamination temperature ;

affixing a first side of the two-sided adhesive tape to a surface of the organic support structure; and

affixing a face of the semiconductor die to a second side of the adhesive tape.

35.) A method of attaching a semiconductor die to an organic support structure, comprising:

affixing a first side of a two-sided adhesive tape to a surface of the organic support structure, wherein the adhesive tape is a hybrid material including a first material having a high glass transition temperature and a second material having a low glass transition temperature; and

affixing a face of the semiconductor die to a second side of the adhesive tape.

36.) A method of attaching a semiconductor die to an organic support structure, comprising:

affixing a first side of a two-sided adhesive tape to a surface of the organic support structure, wherein the adhesive tape is a hybrid material including thermoplastic and thermoset material, and the thermoset component has a glass transition temperature of approximately 30 degrees C; and

affixing a face of the semiconductor die to a second side of the adhesive tape.

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37.) A method of attaching a semiconductor die to an organic support structure, comprising:

affixing a first side of a two-sided adhesive tape to a surface of the organic support structure, wherein the adhesive tape has a lamination temperature of less than or equal to approximately 100 degrees C; and

affixing a face of the semiconductor die to a second side of the adhesive tape.

38.) A method of attaching a semiconductor die to an organic support structure, comprising:

affixing a first side of a two-sided adhesive tape to a surface of the organic support structure, each side of the tape having an adhesive layer, wherein the adhesive tape has a lamination temperature of less than or equal to approximately 100 degrees C, each adhesive layer having a thickness of .0005 inches, and the carrier layer having a thickness of .002 inches; and

affixing a face of the semiconductor die to a second side of the adhesive tape.

39.) (Twice Amended) A method of attaching a semiconductor die to an organic support structure, comprising:

affixing a first side of a two-sided adhesive tape to a surface of the organic support structure, wherein adhesive of the adhesive tape comprises a pressure sensitive, thermosetting adhesive;

elevating the temperature to 100 degrees C to activate the first side of the adhesive tape;

applying pressure to the tape and organic support structure to laminate the adhesive tape to the organic support structure;

affixing a face of the semiconductor die to a second side of the adhesive tape;

elevating the temperature of the tape to activate the second side of the adhesive tape; and

applying pressure to the die and organic support structure to laminate the adhesive tape to the die.

40.) The method of claim 39 further comprising electrically connecting a plurality of bond pads on the die face with a plurality of lead connections on the organic support structure.

41.) The method of claim 40 wherein electrically connecting the bond pads to the lead connections comprises wire bonding bond wires to the bond pads and the lead connections.

42.) The method of claim 41 further comprising forming an encapsulating material around portions of the die and organic support structure.

43.) The method of claim 42 wherein the encapsulating material encapsulates the bond pads, bond wires, lead connections, and a portion of the die face and support structure.

44.) (Twice Amended) A method of attaching a semiconductor die to an organic support structure, comprising:

affixing a first side of a two-sided adhesive tape to a surface of the organic support structure, wherein adhesive of the adhesive tape comprises a pressure sensitive, thermosetting adhesive;

elevating the temperature of the tape to activate the first side of the adhesive tape;

applying pressure to the tape and organic support structure to laminate the adhesive tape to the organic support structure, wherein elevating the temperature and applying pressure occurs for 100ms;

affixing a face of the semiconductor die to a second side of the adhesive tape;

elevating the temperature of the tape to activate the second side of the adhesive tape;

applying pressure to the die and organic support structure to laminate the adhesive tape to the die;

wire bonding bond wires to a plurality of bond pads on the die face with a plurality of lead connections on the organic support structure;

applying an encapsulating material over the bond pads, bond wires, lead connections, and a portion of the die face and support structure.

45.) The method of claim 44 wherein the encapsulating material comprises a curable glob-top formed by dispensing a viscous curable material.

46.) The method of claim 45 further comprising curing the encapsulating material.

47.) The method of claim 46 further comprising inverting the organic support structure and applying a second curable glob-top to a perimeter of a back side of the semiconductor die.

48.) The method of claim 47 further comprising curing the die and the organic support structure.

49.) The method of claim 48 further comprising trimming the organic support structure to form a BGA package.

50.) The method of claim 49 further comprising electrically interconnecting the BGA package to a receiving component.

51.) A method for fabricating a semiconductor package comprising:

providing a semiconductor die having a face and a plurality of bond pads;

providing an organic support structure comprising a die attach area and a plurality of lead connections;

providing a two-sided adhesive tape intermediate the die and the organic support structure to bond the die thereto, wherein the adhesive tape has a lamination temperature of about ambient temperature; and

Sub E2, attaching a first side of the adhesive tape to the die attach area of the organic support structure and a second side of the adhesive tape to the die face.

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52.) The method of claim 51 further comprising applying low heat to laminate the tape to the die and the organic support structure.

53.) The method of claim 52 further comprising applying pressure to laminate the tape to the die and the organic support structure.

54.) The method of claim 53 further comprising electrically connecting the bond pads to the lead connections.

55.) The method of claim 54 wherein the electrical connection comprises connecting a series of bond wires to the bond pads and to the lead connections.

56.) The method of claim 55 further comprising applying a viscous material to cover the bond pads, lead connections, bond wires, and a portion of the organic support structure.

57.) The method of claim 56 wherein the viscous material is a curable glob-top.

58.) The method of claim 34 further comprising applying pressure and 100 degrees C to the tape for 100ms and laminating the tape to the support structure.

59.) The method of claim 34 further comprising laminating the tape to the organic support structure at ambient temperature.

60.) The method of claim 34 further comprising laminating the tape to the organic support structure at 100 degrees C or less.

61.) The method of claim 34 wherein the adhesive tape comprises Carboxyl Terminated Acrylonitrile Butadiene modified epoxy resin.

62.) The method of claim 34 wherein the adhesive tape comprises Carboxyl Terminated Acrylonitrile Butadiene modified epoxy resin formed into layers approximately .0005 inches in thickness.

63.) (Amended) The method of claim 34 wherein the adhesive tape includes a carrier layer, the adhesive tape has a lamination temperature of less than or equal to approximately 100 degrees C, each adhesive layer has a thickness of .0005 inches, and the carrier layer having a thickness of .002 inches.